

~~30~~²⁸₄₄ 45. The method of claim ~~41~~²⁸ wherein the ratio of hydrogen to carbon monoxide ranges from 2:1 to 3.5:1.

~~31~~²⁸₄₅ 44. The method of claim ~~41~~²⁸ wherein decreasing the pressure at the same temperature and pressure corrected residence time, results in decreasing methane selectivity.

~~32~~²⁸₄₆ 45. The method of claim ~~41~~²⁸ wherein decreasing the pressure at the same temperature and pressure corrected residence time, results in increasing conversion %

REMARKS

Claims 1-6, 10-13, and 14-24 are pending. By the foregoing Amendment, claims 16, 21, and 23 have been amended, claims 1-6, 15 and 22 have been canceled without prejudice or disclaimer, and new claims 25-45 have been added. Support for the amendments can be found at page 6, lines 1-5, page 7, lines 29-30, Example 2, and elsewhere in the specification. Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attachment is captioned "Version With Markings To Show Changes Made."

Rejection under 35 U.S.C. §103

Claims 16 18-21 and 23-24 have been rejected under 35 U.S.C. §103(a) as unpatentable over Herskowitz (U.S. Patent No. 5,652,193). This rejection is respectfully traversed.

Applicants are confused regarding paragraphs 2 and 4 of the Office Action. Paragraph 2 states that the rejection of claims 10-13, 16 and 17 over Herskowitz is withdrawn. Paragraph 4

states that claims 16, 18-21 and 23-24 are rejected over Herskowitz. According to applicants' records, claims 18-21 depend from claim 10 which is apparently allowable over Herskowitz; and claims 23-24 depend from claim 22 which also is apparently allowable over Herskowitz. Therefore, the rejection set forth in paragraph 4 is understood to mean that claim 16 is currently rejected over Herskowitz. This rejection is respectfully traversed.

Herskowitz teaches that the catalyst layer thickness should be minimized to decrease CH₄ selectivity. Unlike the invention recited in claim 16, Herskowitz does not teach or suggest a method in which a feed stream of H₂ and CO is passed through a catalyst structure comprising a pore size of at least 0.1 μm. Instead, Herskowitz teaches a method that uses catalyst pellets (col. 2, lines 1-3). The pores in conventional catalyst pellets, such as those disclosed by Herskowitz, are much smaller than 0.1 μm. Herskowitz does not teach or suggest that decreased CH₄ selectivity or any other advantage would be obtained by increasing the pore size of the pellets.

Applicants' claimed method is not obvious over Herskowitz because there is not a proper motivation to modify the Herskowitz reference. "[T]he mere fact that the prior art could be modified would not have made the modification obvious unless the prior art suggested the desirability of the modification." *In re Mills*, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990). In this case, there is no suggestion to modify the pellets disclosed by Herskowitz.

Moreover, applicants' method, recited in claim 16, provides significant advantages over conventional pellet catalysts, such as described by Herskowitz. In applicants' claimed method, a feed stream passes through a catalytic foam, felt or wad comprising a pore size of at least about 0.1 μm. Thus, in the presently claimed method, reactants and products can convectively flow and molecularly diffuse through the large pores in the catalyst structure. In contrast, no convective

flow and primarily only Knudsen diffusion occurs within conventional catalyst pellets. With conventional catalyst pellets, molecular diffusion can only occur by flow around the pellets. The method of the present invention makes highly efficient use of reactor volume - because the feed stream can quickly flow through and react within the catalyst structure. The large pore size material such as a foam, felt or wad allows rapid flow into and out of the catalyst structure, and the feed stream can react anywhere within the catalyst structure. This method of reacting a feed stream is clearly a significant advantage over the method of Herskowitz which requires either flow through a bed of very fine powders (and thus extremely large pressure drops) or flow around catalyst pellets containing only a rim of catalyst (the interior of Herskowitz' pellets do not contain catalyst). Moreover, convective flow and molecular diffusion through the catalyst structure in the inventive method are fast, while in a conventional catalyst pellet only relatively slow Knudsen diffusion primarily occurs. Thus, the method of the present invention enables higher yields, faster flow rates, or both, along with a lower pressure drop across the catalyst bed.

Accordingly, withdrawal of the section 103 rejection is respectfully requested.

Double Patenting Rejection

Claims 10-13 and 16-24 have been provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 9-15 of copending application 09/492,245.

This rejection is respectfully traversed. "A good test, and probably the only objective test, for 'same invention,' is whether one of the claims would be literally infringed without literally infringing the other. If it could be, the claims do not define identically the same invention." *In re Vogel*, 164 USPQ 619, 621 (CCPA 1970). In this case, claims 9-15 of copending application

09/492,245 all require a buffer layer. With the cancelation of claim 22, none of the pending claims recite a buffer layer. Therefore, methods which contain all the claimed elements in the present claims, and in which the catalyst lacks a buffer layer, would literally infringe the pending claims, but would not literally infringe claims 9-15 of copending application 09/492,245. Thus, the two sets of claims do not define the "same" invention. Accordingly, the two claim sets are not coextensive, and withdrawal of the double patenting rejection is respectfully requested.

Objection to Claim 17

Claim 17 has been objected to under 37 CFR 1.75(c) as failing to further limit the subject matter of a previous claim. This objection is traversed. Claim 17 recites that the "porous structure comprises a metal foam." This limitation is not present in claim 16. Accordingly, withdrawal of this objection is respectfully requested.



CONCLUSION

Applicants request withdrawal of the pending rejections and allowance of this application. If the Examiner perceives any barriers to allowance or any matters related to this application that could be addressed by telephone, the Examiner is encouraged to call the attorney for applicants at the number below.

Respectfully submitted,

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